

COLOUR LASER PRINTERS

INTRODUCTION

Colour laser printers are often thought of as big, expensive and really only suited to a large office. This month we can happily disprove these myths, as they've become much cheaper, lighter and more streamlined. In fact, with the cheapest printer here costing just £114, they are finally within most people's budgets.

A colour laser printer is a great choice if you need to print high-quality documents fast, whether you're producing a presentation or letting the kids print their homework.

This month we test nine of the most affordable printers. Each will do a good job at home or in a small office, but two of them can also cope with the demands of a busy office. We've tested them all for speed and print quality, and calculated their running costs, so you can find the right printer for your budget now and during the printer's life.

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Printers and audio expert

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MAKE A GOOD IMPRESSION

With models available for as little as £114, colour laser printers are now well within most people's budgets. We test nine devices suitable for the

Choosing a... Colour Laser Printer

Colour laser printers can produce large numbers of pages quickly, and are known for printing clear, high-quality documents with no smudged text or images. They're excellent for printing formal documents, copies of webpages or just pages of mono text and can be cheap to run.

Each printer in this review produces sharp text and good-quality colour images. Some excel at producing mono documents quickly but suffer from expensive and less-impressive colour prints, while others create sharp and accurate colour prints but cost more to buy.

If you want to print double-sided booklets or save paper, an automatic duplexer is valuable, and if you print in great volume, a large paper tray can be vital.

We'll help you choose the right printer, whether you want to print high-quality colour presentation documents or simply need quick and reliable mono prints and the occasional colour print.

INTERFACES

Most of the printers we've looked at have both USB and Ethernet ports, although the two with the best colour quality that cost under £260 support only USB. USB printer connections are typically very easy to set up; it's simply a matter of installing the driver and plugging in

the cable. You can use Windows' built-in printer sharing system to enable other PCs on a network to connect to your USB printer, but it's more practical to buy a printer that can connect to a network on its own if you're buying it to share with multiple computers.

Network printers can be hard to configure, but several of them have installers that auto-detected our network settings perfectly. Our report cards detail any problems we encountered. Two of the printers have parallel ports, although you're unlikely to need them unless you're still using a legacy system.

Whichever type of connection you'll use, remember to buy appropriate cables to attach your printer to your PC or network, as none of these printers comes with any.

COSTS AND CONSUMABLES

Although you can buy a budget colour laser printer for the same price as a high-end inkjet, laser printers often require a lot of expensive consumables. Fortunately, most of these don't have to be replaced very often.

Toner cartridges are the consumable you'll have to replace most frequently. Most printers come with a partially filled toner cartridge, although even the most poorly supplied printer in the group comes with 1,000 pages' worth of both mono and colour toner. While





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mono print costs are usually inexpensive, colour costs can be quite high, as these use toner from three colour cartridges.

All laser printers use a drum, also known as the Organic Photo Conductor (OPC), to create a page. The drum is given a positive charge, and a laser traces the image of a page on to it, discharging the areas it touches. Positively charged toner is released on to the drum and is attracted to these discharged areas. The toner is then heated and fused to a sheet of paper to create the print.

Some printers here, such as HP's LaserJet models, incorporate the drum into the toner cartridge, so toner is the only consumable. This helps keep costs down. Most printers, however, use drums that must be replaced separately.

This is unlikely to be a frequent expense in anything but the busiest offices, as a drum will often last for 45,000 pages or more. Be aware that in some cases the drum can't be replaced, so the printer's life ends with the drum. Our reviews and table tell you when and if the drum needs replacing.

Laser printers require other replaceable parts. Waste toner containers are the most common, but are cheap and easy to replace. Printers intended for heavy use, such as Brother's HL-4050CDN, often have other replaceable parts, such as the belt unit that transfers the image from the drum to the paper. We take each cost

Fade to grey The greyscale test

If you're just checking drafts or making a quick print of a webpage, you don't necessarily need full glorious colour. Switching to mono greyscale mode can save you money and cut print times. However, some printers handle these prints better than others.



▲ Canon's i-SENSYS LBP5100 creates beautiful greyscale images with a smooth shading gradient



▲ Konica Minolta's Magicolor 2550 can print quickly under PCL6 emulation, but subtleties of shading are poorly rendered

into account when calculating the total ownership costs listed in the table on page 96.

SPEED AND QUALITY

The table also shows which printers put in the best performance in terms of speed. We list both the manufacturers' claimed maximum speeds and the results of our own tests.

Single-pass printers transfer black, cyan, magenta and yellow content to the page in a single operation. These are potentially faster

than printers that create four page images and apply each to the page separately. However, single-pass printers don't always print colour as quickly as they do mono, and many of the four-pass machines have similar colour print speeds.

Whether prints look good or not can't be determined by quantitative tests, so we print a series of images designed to test the colour accuracy, quality of shading, contrast and detail produced by the printers. The results of these findings can be found in our reviews.



TALLYGENICOM 8108N Colour Laser Printer



£114 inc VAT

From www.printerland.co.uk



TallyGenicom's 8108N is over £80 cheaper than any other printer in the group. It also has the fastest mono print speeds, printing at 25.4ppm. It's not the bulkiest printer here, but at 29kg it's one of the heaviest. The USB driver installed without a hitch, but network installation was more problematic. The installer couldn't detect the printer across our network, so we had to use the Windows Add Printer Wizard.

Our mono text documents were clear and sharp, and colours were accurately rendered in our images and documents. However, colour printing was slow and noisy, and produced a distinct smell of ozone and melting toner. Print quality was good, with detail and colour generally accurate apart from some visible dithering and uneven colouration in places. Greyscale printing was smooth, although very pale shades of grey were rendered as white.

The 8108N's network port and quick mono print speeds make it an ideal budget choice for a small or home office. However, its non-replaceable photoconductor drum wears out after 48,000 pages, after which you'll have to replace the printer. This means it won't stand up to three years of heavy use (40,000 mono and 20,000 colour pages), but the printer's purchase price is so low that, even though you'll have to replace the printer, its overall three-year running costs are still reasonable. The supplied cartridges contain enough toner for a stingy 1,000 mono and 1,000 colour pages, but the 8108N is one of only two printers here with a two-year warranty.

The 8108N's mono print speed is astounding, and its general print quality is good enough for almost any task, but the most impressive thing about this printer is its price. It may not bear up to the heaviest of workloads, but it's a great choice for anyone who needs a laser printer for light to medium use and occasional colour printing. It's a Budget Buy.

SUMMARY

- ☒ Very fast mono prints
- ☒ Cheap to buy
- ☒ Expensive colour print costs

HOME/SMALL OFFICE COLOUR LASER 600x600dpi, 31ppm mono, 8ppm colour, USB Hi-Speed, 10/100 Ethernet interfaces
PART CODE 043792
DETAILS www.tallygenicom.co.uk



EPSON AcuLaser C1100



£197 inc VAT

From www.printerland.co.uk

We first reviewed Epson's four-pass AcuLaser C1100 in April 2005 (*Shopper 206*), giving it a Best Buy award, and it won our award for Best Printer in 2006 (*Shopper 226*). Since then its price has dropped to under £200, and although it's starting to show its age it still gave us the second-fastest mono print speed in the group, with 21.1ppm. It supports both network and USB Hi-Speed connections, and is one of only two printers in the test with a parallel port.

The C1100's installer doesn't provide any helpful prompts during setup to tell you when to plug in the USB cable, but otherwise installing the network and USB drivers was simple. Installing the toner cartridges is also a little more complicated than it is on most devices. The C1100's cartridges are held in a rotating carousel, which must move into the correct position before you can insert each colour. If you want to change a cartridge, you have to go through several levels of the printer's menu system and select it so that the printer rotates it into an accessible position.

Black text and greyscale images looked good at the printer's default settings, and there are many advanced colour settings hidden in the driver's configuration menus. These provide a great deal of control over the quality of printed colour images. We were particularly pleased with the effect this had on darker images, which we were able to make clearer and more detailed.

Despite its age, the AcuLaser C1100 can hold its own for mono print speed and colour print quality, and it produced a single page of mono text faster than any other printer in the group. The C1100's mono print costs are low, and colour printing costs are average for the group, thanks to its inexpensive, high-yield replacement toner cartridges. However, the photoconductor drum has to be replaced after 42,000 mono pages and is expensive at £160, so the AcuLaser is less economical for heavy long-term use. HP's LaserJet 3600 costs £53 more but is still better value overall, so it beats the C1100 to a Best Buy award.

SUMMARY

- ☒ Very fast mono prints
- ☒ Good overall print quality
- ☒ Awkward toner system; expensive drum

HOME/SMALL OFFICE COLOUR LASER 600x600dpi, 25ppm mono, 5ppm colour, parallel, USB Hi-Speed, 10/100 Ethernet interfaces
PART CODE C11C567001
DETAILS www.epson.co.uk



HP Color LaserJet 2605



£240 inc VAT

From www.ebuyer.com

HP's compact LaserJet 2605 is the cheapest single-pass printer in the group. However, it had the second-slowest print speeds in our mono and colour document print tests, at 10.6ppm and 3.9ppm. It was also the slowest to print our single page of text. The printer has only a USB Hi-Speed port and was easy to install. However, the driver set the default paper size to Letter, and we had to reset this in the printer's Properties page before it could correctly print to A4.

Like many printers here, the 2605's toner cartridges are packed into the printer when it arrives, and loading them is a matter of taking them out, removing the packing material and clipping them back in. HP generously supplies fully loaded cartridges with the printer, so they should last a while under light use. The drum is built into the cartridges and replaced every time they're changed. This cuts down the overall cost of consumables, but as no high-yield toner cartridges are available for the 2605 it's expensive to run if you do a lot of printing.

Although print speeds were slow, we were impressed by the 2605's print quality. Black text was sharp, and colours were dense and accurate. Our photo-quality images looked great, with precise detail and shading, although a slight blue tint gave some images a cold appearance. Detailed greyscale shading was also accurate, but very pale shades were rendered as plain white. We had difficulty printing envelopes using the priority feed slot at the front of the printer. The print quality and positioning were fine when they printed, but several of our attempts were crumpled by the rollers or caught in a paper jam.

Although the Color LaserJet 2605 produces good-quality documents, its slow print speeds, relatively high print costs and flawed media handling make it less appealing than other devices at a similar price. TallyGenicom's 8108N is better for office work on a budget, while for general tasks HP's Color LaserJet 3600 is worth the extra money.

SUMMARY

- ☒ Good overall print quality
- ☒ High print costs; annoying default settings
- ☒ Slow colour printing

HOME/SMALL OFFICE COLOUR LASER 600x600dpi, 12ppm mono, 10ppm colour, USB Hi-Speed interfaces
PART CODE Q7821A
DETAILS www.hp.co.uk



XEROX Phaser 6130



£241 inc VAT
From www.printerbase.co.uk

Xerox's Phaser 6130 is the lightest printer in the group, and one of the smallest. It was easy to set up once we'd removed all the internal packaging and protective sheets, although this was fiddly in the case of the toner cartridges.

The installer automatically detected the printer across our network, but as with the HP printers, we found we had to reset the driver's default page size to A4 before our documents would print correctly. The Phaser's driver also resizes content to match the paper size by default, which can make for strange-looking printouts. These problems were annoying but easy to solve. As well as a 250-page paper tray, the Phaser has a single-page feed slot, but when we tried to print envelopes using the slot, they were crumpled and the text misaligned.

This is the only printer here to use Adobe's PostScript 3 page description language rather than a host-based PostScript emulation, but print quality was still poor. Mono documents were the worst in the group, with some letters suffering from a faint shadow around their left edge. Most of our colour prints had a slight red tint, particularly pale colours and flesh tones in photo-quality images, and many also looked grainy. Our greyscale shading test results were also grainy, although all but the very palest shades were reproduced accurately.

The Phaser's mono print speed is poor and its colour speed unremarkable at just 10.8ppm mono and 4.2ppm colour. Mono print costs are the most expensive in the group, while only the budget TallyGenicom 8108N has higher colour costs. Replacement colour cartridges last a stingy 1,900 pages, while the photoconductor unit has a life of only 30,000 pages, after which the whole printer has to go in the bin.

Although Xerox's printers have an excellent pedigree, this particular device produces disappointing results. The quality of its mono text prints is substandard, and we weren't impressed by its colour printing. This, in combination with high print costs and a short-lived photoconductor drum, means this printer has little to offer.

SUMMARY

- ☒ Poor mono text quality
- ☒ High print costs
- ☒ Slow print speeds

HOME/SMALL OFFICE COLOUR LASER 600x600dpi,
16ppm mono, 12ppm colour, USB Hi-Speed, 10/100
Ethernet interfaces
PART CODE 6130V_N
DETAILS www.xerox.co.uk



HP Color LaserJet 3600



£250 inc VAT
From www.printerland.co.uk



HP's Color LaserJet 3600 is one of the heavier printers in the group at 27kg, but setting it up is easy and involves little more than removing packing material from round the toner cartridges shipped inside it. The included cartridges are fully filled rather than starter models, and have a capacity of 6,000 mono and 4,000 colour pages. This version of the printer has only a USB Hi-Speed connection, which was easy to set up. A network version, the Color LaserJet 3600n, is available from around £385 if you need a more flexible way to print from multiple PCs.

Like HP's Color LaserJet 2605, the printer driver defaults to Letter format, so you have to change it to A4 in the Properties page. We were impressed by both the speed and quality of the 2605's prints. Colour print speeds were the second-fastest in the group at 9.6ppm. Some dark images looked a bit murky, but light colours and flesh tones were reproduced with great detail and accuracy. Black text was solid and well defined. Shaded greyscale images weren't as smooth as we'd have liked, and they suffered from faint coloured tints when printed as part of a mixed-colour document. A tray pulls out from the front of the printer for loading envelopes and other special media. This was easier to use than the single-sheet feed slots favoured by many other printers on test.

The photoconductor drum is built into the high-capacity toner cartridges, so there are no hidden costs in the form of expensive consumables. As a result, the 3600 has the lowest total ownership costs in the group.

HP's Color LaserJet 3600 produced great results in all our tests, and had some of the fastest colour print speeds in the group. Its colour printing doesn't quite match that of Canon's i-SENSYS LBP5100, but the LaserJet 3600 is the cheapest printer to run in the long term in this month's Labs. This fast, economical USB printer is a great choice for everyday tasks, and it's our Best Buy.

SUMMARY

- ☒ Cheap to run
- ☒ Good overall print quality; fast print speeds
- ☒ Annoying default settings

HOME/SMALL OFFICE COLOUR LASER 600x600dpi,
17ppm mono, 17ppm colour, USB Hi-Speed interfaces
PART CODE Q5986A
DETAILS www.hp.co.uk



CANON i-SENSYS LBP5100



£257 inc VAT
From www.morecomputers.co.uk

Canon's i-SENSYS LBP5100 is the cheapest printer here to include a duplexer as standard. It's a four-pass printer, but its colour print speed of 8.8ppm is among the fastest. Mono prints are rather slow at 10.2ppm. It supports only USB Hi-Speed as standard, but an optional 10/100 Ethernet interface is available.

The cartridges come packed inside the machine and contain a full load of toner. Installing them is a simple matter of removing their packaging and clicking them into place. It's recommended that you calibrate the printer when you first set it up, and while the process isn't immediately obvious, the manual contains a step-by-step guide to accessing the calibration options through the printer's menu. Once initiated, the process is automatic.

The pin-sharp print quality of mono text documents was excellent even by the high standards of the printers in this group, and duplex printing was quick and flawless. Colour prints were smooth, vivid and accurate, with remarkable image quality, rich colours and precise detail. Both high- and low-contrast pictures were reproduced faithfully, and flesh tones were true to life. Subtle gradients of greyscale shading were particularly accurate. Like Epson's AcuLaser, the LBP5100's driver has a number of modes designed to render specific types of document at the highest possible quality. Options include modes for printing illustrated presentations or fine line documents such as plans or technical diagrams.

Print costs are reasonable, if not as economical as those for printers that accept higher-yield cartridges. The photoconductor unit is integrated with the toner cartridges, which are the printer's only consumable, and long-term running costs are average for the group. Although slow by the group's standards, the Canon's mono text print speed is fast enough to deal with most document printing tasks. Where this device really shines is in its ability to print fast, accurate presentation-quality colour. It's an excellent printer, and only misses winning our Best Buy award due to its relatively high print and ownership costs.

SUMMARY

- ☒ Excellent print quality
- ☒ Fast colour prints
- ☒ Fairly expensive to run

HOME/SMALL OFFICE COLOUR LASER 600x600dpi,
12ppm mono, 10ppm colour, USB Hi-Speed interfaces
PART CODE 1315B008AA
DETAILS www.canon.co.uk



KONICA MINOLTA Magicolor 2550

★★★

£356 inc VAT

From www.printerland.co.uk

Konica Minolta's four-pass Magicolor 2550 looks rather uninspiring even by the standards of laser printers. Its paper tray folds down from the front of the machine and is protected by a plastic enclosure that clips into place around it. The driver's setup program was unhelpful, and the printer's menus were difficult to navigate. We had to enable DHCP and AutoIP on the printer before the network version of the driver could detect it on our network, although the installer also gave us the option of entering the printer's IP address manually.

The Magicolor 2550 uses its own emulations of the PCL6 and PostScript 3 page description languages, and gives you the option to install separate drivers for each. PostScript 3 emulation improved image quality slightly but print speeds were much slower. For example, the 24-page colour document, which took six minutes and 25 seconds to print under PCL emulation, took 13 minutes and 53 seconds with PostScript emulation. Because of this, we've listed print times using the PCL6 emulation driver in our graphs on page 94.

Mono text quality is equally good with both drivers but, again, PCL emulation was faster. Greyscale image shading wasn't particularly good with PostScript, but was poor under PCL emulation. Colour graphics were clear and solid with both drivers, although PostScript emulation produced faded-looking dark shades on some high-contrast photos, while PCL emulation made darker photos look murky.

Print times for mono text were respectable at 17.6ppm, and a single page was printed in a quick 13 seconds. The 2550 was the slowest printer in the group to produce colour documents, and made squeaking and grinding noises while printing colour. Graphical quality was good overall, but we had serious problems balancing dark colours using either driver. Print and long-term consumable costs are among the cheapest in the group, and the printer comes with a generous 4,500 pages of mono and colour toner. The 2500 is expensive to buy, though, and its colour prints are mediocre.

SUMMARY

- ☒ Cheap to run
- ☒ Slow, inaccurate colour printing
- ☒ Fiddly to set up

WORKGROUP COLOUR LASER 600x600dpi, 20ppm mono, 5ppm colour, parallel, USB Hi-Speed, 10/100 Ethernet interfaces
PART CODE A00V023
DETAILS www.konicaminoltaprinters.co.uk



KYOCERA FS-C5015N

★★★★★

£370 inc VAT

From www.printerbase.co.uk

How you set up Kyocera's FS-C5015N is not immediately obvious. There's a waste toner drum to install, unusually positioned toner cartridges and a cleverly designed but odd-looking paper tray with a sprung support that holds the pages in place. Fortunately, full manuals are included on the installation CD, although some of the information provided is inadequate. The guide also leads you through a complicated colour registration process, similar to print head alignment on an inkjet, which requires you to select the most accurately drawn lines from several printed options.

You have to select your model of printer from a list on the installation CD. After that, both USB and network installation went smoothly, although we had to set up a TCP/IP port and enter the device's IP address manually while setting up the network driver. The installer also offers various additional plug-ins, including a colour page count and a facility to print multiple pages on a single sheet.

Mono text print quality was good, but greyscale images picked up faint coloured bands when printed as part of a mixed-colour document with the printer running in colour mode. Colour prints were sharp, bright and accurate, but some mid-tones were too light.

The Kyocera's print speeds were average for the group. The toner cartridges that come with the printer are only half full, but that still gives you 3,000 mono and 2,000 colour pages before you need to buy replacements. The photoconductor is a non-replaceable part, but lasts for a massive 100,000 impressions, which should easily match the working life of the print engine. Long-term running costs are low, costing £1,562 over three years of heavy use. The printer is covered by a two-year warranty.

The FS-C5015N isn't fast, but its print quality is generally good and its long-term heavy-use running costs are the second-lowest in the group behind those of HP's Color LaserJet 3600. It's expensive to buy, but a two-year warranty and the longevity of its drum make it a good choice if you need a workhorse.

SUMMARY

- ☒ Good overall print quality
- ☒ Cheap to run
- ☒ Expensive to buy

WORKGROUP COLOUR LASER 600x600dpi, 16ppm mono, 16ppm colour, USB Hi-Speed, 10/100 Ethernet interfaces
PART CODE 1102HJ3UK0
DETAILS www.kyoceramita.co.uk



BROTHER HL-4050CDN

★★★★★

£418 inc VAT

From www.printerbase.co.uk

Brother's HL-4050CDN is a close relative of the HL-4040CN reviewed in *What's New, Shopper* 238. This version combines the same reasonable print costs and high speeds with the benefit of an automatic duplexer and an optional 500-sheet paper tray, which brings its total paper capacity up to 800 sheets.

This single-pass workgroup laser is one of the largest and heaviest in the group, but it's easy to set up, with toner cartridges that slot into a tray that slides out from the front of the device. It supports USB, parallel and Ethernet connections, and is the only device on test with a PictBridge USB port for printing files directly from a digital camera or flash drive.

The HL-4050CDN has the highest print resolution in the group, at 2,400x600dpi. Mono and colour print quality is excellent, with sharp text and detailed, accurate images. Greyscale shading was smooth, but greyscale images printed in Auto or Colour modes suffered from a tint of colour. Greyscale prints produced in mono print mode looked excellent, with no trace of this problem.

The HL-4050CDN produced the fastest and best-quality colour prints in the group, and mono speeds were also quick. Both colour and mono print costs are remarkably low if you buy high-yield cartridges, and the printer comes equipped with enough toner for 2,500 mono and 1,500 colour pages. It requires more consumables than any other printer here, including a £112 photoconductor drum that must be replaced every 17,000 pages. Despite this, the total cost of ownership is low, with only HP's Color LaserJet 3600 and Kyocera's FS-C5015N costing less to run over three years of heavy use. However, it's less economical over three years of light or medium use.

Brother's HL-4050CDN is expensive to buy and complicated to maintain, so it isn't ideal for home or home office users. It's cheap to run if you do a lot of printing, though, and has outstanding print quality, so it's an excellent choice for a small-to-medium-sized office in need of a presentation-quality laser printer.

SUMMARY

- ☒ Very fast colour prints; low heavy-use print costs
- ☒ Excellent print quality
- ☒ Expensive to buy

WORKGROUP COLOUR LASER 2,400x600dpi, 20ppm mono, 20ppm colour, parallel, USB Hi-Speed, PictBridge USB, 10/100 Ethernet interfaces
PART CODE HL4050CDNZU1
DETAILS www.brother.co.uk



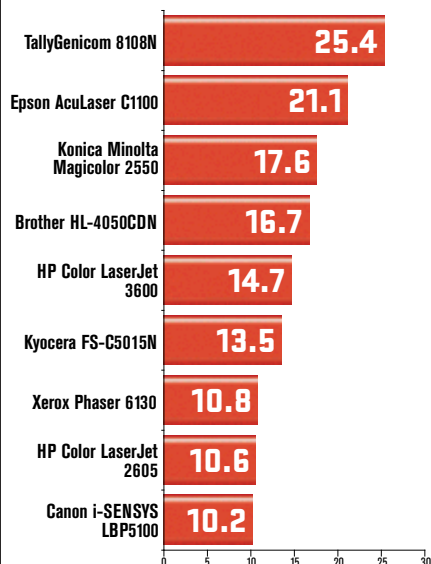
BENCHMARKS

Bigger is better

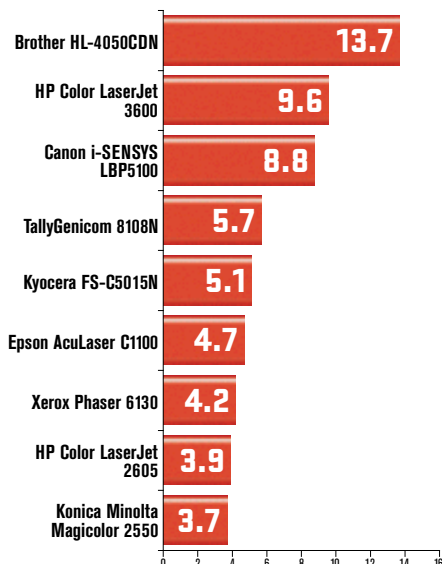
Smaller is better

Performance Print speed

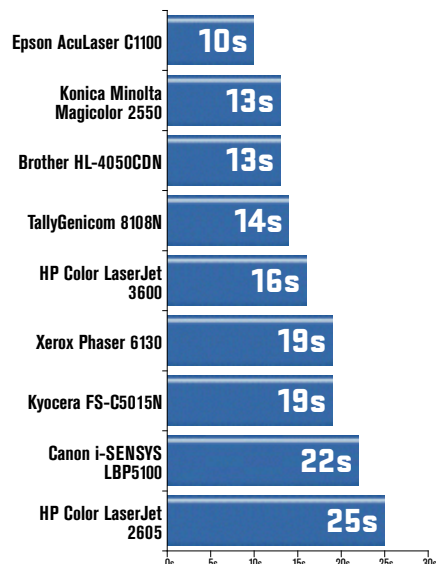
25-page mono text (ppm)



24-page mixed colour

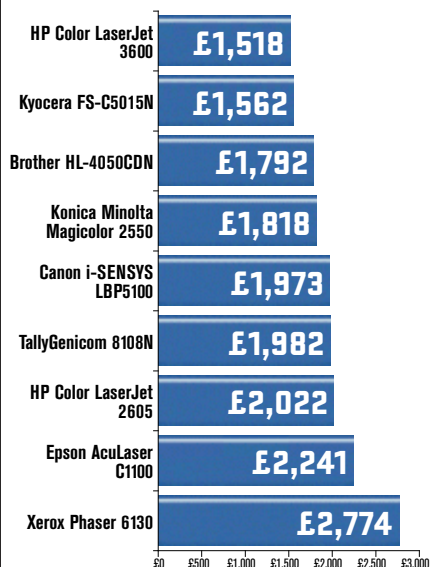


Time to first page

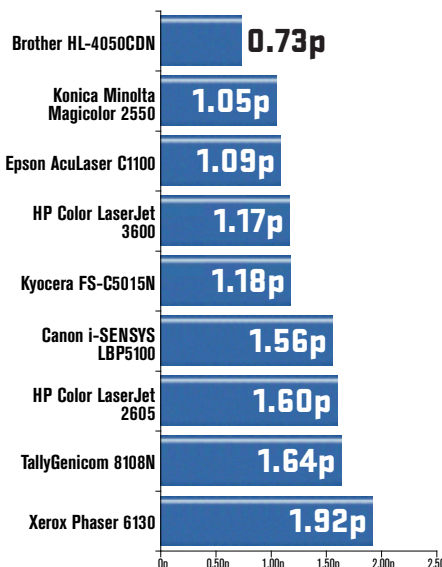


Performance Print costs

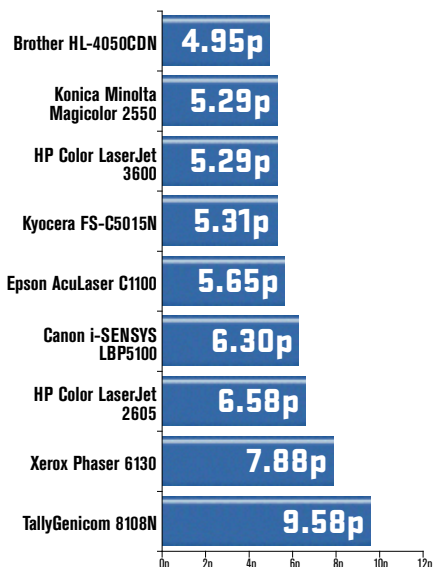
Total cost: Three years' heavy use



Price per mono page



Price per colour page



How we test Colour laser printers

PRINT SPEED

We time how long each printer takes to print a single page of text, a 25-page document and 24 pages of mixed-colour text and images. We perform all these tests at the printer's default quality settings. We also perform timed prints of two 10x8in and six 6x4in photos on normal A4 paper at maximum print quality.

PRINT QUALITY

The text and image documents we print during the speed test also enable us to

compare the quality of the printers' output. The photos include images designed to test colour accuracy, contrast and shading. We use an additional suite of images to test greyscale shading, block colour printing and image alignment.

PRINT COSTS

We use the manufacturers' page yield figures to work out separate print costs per page for mono and colour documents. Most manufacturers calculate page yields using ISO/IEC 19752 standard test pages at 5% coverage.

We divide the cost of each mono toner cartridge (including VAT) by the number of pages it can produce. For colour costs, we add up the costs of the cyan, magenta and yellow cartridges to reach our final colour print cost.

We also calculate the cost of owning the printer for three years of light, medium and heavy use. These figures include the cost of buying the printer, toner, replacement drums and other consumables. In the case of printers with non-replaceable drums, we've calculated these figures to include the cost of replacing the entire printer.



HOME/SMALL OFFICE COLOUR LASERS



WORKGROUP COLOUR LASERS

MANUFACTURER	TALLYGENICOM	EPSON	HP	XEROX	HP	CANON	KONICA MINOLTA	KYOCERA	BROTHER
Model	8108N Colour Laser Printer	AcuLaser C1100	Color LaserJet 2605	Phaser 6130	Color LaserJet 3600	i-SENSYS LBP5100	Magicolor 2550	FS-C5015N	HL-4050CDN
Rating	★★★★	★★★★	★★★	★	★★★★★	★★★★	★★	★★★★	★★★★★
Maximum resolution	600x600dpi	600x600dpi	600x600dpi	600x600dpi	600x600dpi	600x600dpi	600x600dpi	600x600dpi	2,400x600dpi
QUOTED SPEEDS									
Quoted speed, mono A4	31.0ppm	25.0ppm	12.0ppm	16.0ppm	17.0ppm	12.0ppm	20.0ppm	16.0ppm	20.0ppm
Quoted speed, colour A4	8.0ppm	5.0ppm	10.0ppm	12.0ppm	17.0ppm	10.0ppm	5.0ppm	16.0ppm	20.0ppm
Quoted warm-up time	45s	37s	0s	30s	0s	0s	55s	1m 20s	35s
Quoted time to first page, mono	12s	9s	20s	14s	14s	20s	13s	16s	16s
Quoted time to first page, colour	18s	17s	20s	17s	14s	20s	22s	16s	17s
Total quoted time to first print, mono	57s	46s	20s	44s	14s	20s	1m 8s	1m 36s	51s
Total quoted time to first print, colour	1m 3s	54s	20s	47s	14s	20s	1m 17s	1m 36s	52s
TESTED SPEEDS									
First mono page from sleep	1m 2s	19s	N/A	28s	16s	27s	47s	1m 1s	39s
First colour page from sleep	1m 12s	23s	N/A	1m 14s	18s	37s	58s	1m 5s	42s
Letter – time to first page	14s	10s	25s	19s	16s	22s	13s	19s	13s
25-page mono document – total time	59s (25.4ppm)	1m 11s (21.1ppm)	2m 22s (10.6ppm)	2m 19s (10.8ppm)	1m 42s (14.7ppm)	2m 27s (10.2ppm)	1m 25s (17.6ppm)	1m 51s (13.5ppm)	1m 30s (16.7ppm)
24-page mixed-colour document – total time	4m 12s (5.7ppm)	5m 8s (4.7ppm)	6m 7s (3.9ppm)	5m 42s (4.2ppm)	2m 30s (9.6ppm)	2m 44s (8.8ppm)	6m 25s (3.7ppm)	4m 44s (5.1ppm)	1m 45s (13.7ppm)
Two 10x8in photos – total time	43s	40s	1m 51s	2m 10s	30s	40s	1m 36s	1m 52s	48s
Six 6x4in photos – total time	52s	57s	1m 12s	3m 20s	42s	46s	1m 50s	2m 41s	55s
PHYSICAL AND ENVIRONMENTAL									
Standard interfaces	USB Hi-Speed, 10/100 Ethernet	Parallel, USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed	USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed	USB Hi-Speed	Parallel, USB Hi-Speed, 10/100 Ethernet	USB Hi-Speed, 10/100 Ethernet	Parallel, USB Hi-Speed, PictBridge USB, 10/100 Ethernet
Optional interfaces	None	None	None	802.11a/b/g wireless	None	10/100 Ethernet	None	802.11b wireless	None
Dimensions (HxWxD)	480x420x385mm	445x445x439mm	370x407x453mm	389x400x394mm	430x413x510mm	395x407x365mm	341x430x564mm	385x345x470mm	317x419x475mm
Weight	29.0kg	28.0kg	18.5kg	17.2kg	27.1kg	18.0kg	20.8kg	25.0kg	29.0kg
Noise	66dB(A)	53dB(A)	60dB(A)	52dB(A)	55dB(A)	50dB(A)	52dB(A)	52dB(A)	54dB(A)
Maximum duty cycle (pages per month)	10,000 mono/10,000 colour	45,000 combined	35,000 combined	40,000 combined	50,000 combined	35,000 combined	35,000 combined	50,000 combined	Not disclosed
Power consumption – printing	630W average	257W average	255W average	280W average	337W average	340W average	600W average	452W average	510W average
Power consumption – sleep mode	35W	61W	18W	50W	15W	16W	5W	16W	85W
PAPER HANDLING									
Maximum paper size	A4/legal	A4/legal	A4/legal	A4/legal	A4/legal	A4/legal	A4/legal	A4/legal	A4/legal
Maximum paper weight	210gsm	210gsm	105gsm	220gsm	220gsm	216gsm	200gsm	200gsm	163gsm
Standard paper inputs (capacity)	1 (250)	1 (180)	2 (250)	2 (251)	2 (350)	1 (250)	1 (200)	2 (600)	2 (300)
Maximum paper inputs (capacity)	2 (750)	2 (680)	3 (500)	2 (251)	3 (850)	2 (750)	2 (700)	3 (1,100)	3 (800)
Output tray capacity	250 sheets	200 sheets	125 sheets	150 sheets	250 sheets	125 sheets	200 sheets	250 sheets	150 sheets
Duplex	None	C12C802191, £170	None	None	Yes	Yes	1710586-100, £169	DJ-301, £192	Yes
GENERAL									
Technology	Four-pass colour laser	Four-pass colour laser	Single-pass colour laser	Single-pass colour laser	Single-pass colour laser	Four-pass colour laser	Four-pass colour laser	Single-pass colour laser	Single-pass colour laser
Language(s)	Host-based	Host-based	Host-based	PostScript 3	Host-based	Host-based	Host-based	Host-based	Host-based
Supported operating systems	Windows 98/2000/Me/NT/XP/Vista, Mac OS 9/X	Windows 95/98/Me/XP/2000/Server 2003/NT 4.0/XP/Vista, Mac OS 9.x or later/Mac OS X 10.1.2 or later	Windows 2000/XP/Server 2003/Vista, Mac OS X 10.2.8 or later	Windows 2000/Server 2003/XP/Vista, Mac OS X 10.2 or later, Linux	Windows 98/Me/2000/XP/Server 2003/Vista, Mac OS X 10.2.8 or later, Linux	Windows 98/Me/2000/Server 2003/XP/Vista, Mac OS X 10.4 or later, Linux (check kernel version)	Windows 98/Me/NT4/2000/XP/Server 2003/Vista, Mac OS 9.1/X 10.2 or later, Linux	Windows 95/98/Me/NT4.x/2000/XP/Vista, Mac OS 9.x/X 10.2 or later, Linux, UNIX	Windows 2000/XP/XP-64/Server 2003/Vista, Mac OS X 10.2.4 or later, Linux
Memory, standard (max)	64MB (64MB)	32MB (256MB)	64MB (320MB)	128MB (1.13GB)	64MB (128MB)	16MB (16MB)	128MB (640MB)	128MB (640MB)	64MB (576MB)
Other features and options	Three year onsite warranty upgrade SP8108C, £48	Three-year onsite warranty upgrade EPCRP45, £163	Three-year onsite warranty upgrade UC736E, £67	Three-year onsite warranty upgrade 6130ES3; £76, Multi Protocol Network Card 097503745, £156	Three-year onsite warranty upgrade U8037E, £194	None	Two-year onsite warranty upgrade 1760664-005, £85; 40GB hard disk 2600774-100, £285	Three-year onsite warranty upgrade 870KLECS36A, £200; 40GB hard disk HD-5, £566	Three-year onsite warranty upgrade ZWP50140, £149
BUYING INFORMATION									
Price inc VAT	£114	£197	£240	£241	£250	£257	£356	£370	£418
Price per mono A4 page inc VAT	1.64p	1.09p	1.60p	1.92p	1.17p	1.56p	1.05p	1.18p	0.73p
Price per colour A4 page inc VAT	9.58p	5.65p	6.58p	7.88p	5.29p	6.30p	5.29p	5.31p	4.95p
Price for 2nd paper cassette inc VAT	500-sheet 043333, £200	500-sheet C12C802181, £164	N/A	N/A	500-sheet Q5985A, £215	N/A	500-sheet 1710585-200, £182	250-sheet PT-300, £22.26; 500-sheet PF-60 £188	500-sheet LT100CL, £136
Capacity of supplied black toner (pages)	1,000	1,500	2,500	1,000	6,000	2,500	4,500	3,000	2,500
Capacity of supplied colour toners (pages)	1,000	1,500	2,000	1,000	4,000	2,000	4,500	2,000	1,500
Capacity of supplied drum/s (pages)	48,000 combined (non-replaceable)	42,000 mono/10,500 colour	Replaced with toner	30,000 combined (non-replaceable)	Replaced with toner	Replaced with toner	45,000 combined	100,000 combined (non-replaceable)	50,000 combined
Estimated total ownership cost – three years' light use (2,400 mono and 1,200 colour pages)	£484	£467	£282	£499	£250	£419	£356	£443	£528
Estimated total ownership cost – three years' medium use (18,000 mono and 9,000 colour pages)	£855	£555	£626	£895	£532	£623	£699	£537	£732
Estimated total ownership cost – three years' heavy use (72,000 mono and 36,000 colour pages)	£1,982	£2,241	£2,022	£2,774	£1,518	£1,973	£1,818	£1,562	£1,792
Warranty	Two years onsite	One year onsite	One year RTB	One year onsite	One year onsite	One year RTB	One year onsite	Two years onsite	One year onsite
Supplier	www.printerland.co.uk	www.printerland.co.uk	www.ebuyer.com	www.printerbase.co.uk	www.printerland.co.uk	www.morecomputers.co.uk	www.printerland.co.uk	www.printerbase.co.uk	www.printerbase.co.uk
Details	www.tallygenicom.co.uk	www.epson.co.uk	www.hp.co.uk	www.xerox.co.uk	www.hp.co.uk	www.canon.co.uk	www.konicaminoltaprinters.co.uk	www.kyoceramita.co.uk	www.brother.co.uk
Part code	043792	C11C567001	Q7821A	6130V_N	Q5986A	1315B008AA	A00V023	1102HJ3UK0	HL4050CDNZU1

Labs verdict Colour laser printers

There are several excellent printers in this month's Labs, some of which are better suited to particular tasks. However, our Budget Buy is TallyGenicom's 8108N. It's cheap to buy, and while it's not especially cheap to run it delivers high-quality prints in mono and colour, and its mono print speed is unmatched by any other printer in the group.

Thanks to its low heavy-use print costs and superb document print quality, Brother's

HL-4050CDN would definitely be our choice for a high-quality office printer, but its high purchase price and large size rule it out for most home users. At the more affordable end of the scale, Canon's i-SENSYS LBP5100 produced brilliant colour prints but was just pipped to the post by HP's Color LaserJet 3600, which combines economical print and ownership costs with fast print speeds and great-quality printing. It's our Best Buy.

HOME/SMALL OFFICE COLOUR LASERS



TALLYGENICOM
8108N Colour Laser Printer



HP
Color Laser Jet 3600

